



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,969	08/20/2003	Takashi Ishikawa	031015	4974
38834	7590	03/06/2006		
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036			EXAMINER SANDERS, KRIELLION ANTIONETTE	
			ART UNIT	PAPER NUMBER
			1714	

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8

Office Action Summary	Application No. 10/643,969	Applicant(s) ISHIKAWA ET AL.	
	Examiner Kriellion A. Sanders	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ranta et al, cited on applicant's form 1449 in view of, Yanagisawa et al, US Patent No. 6654229.

1. Ranta et al discloses a method for dispersing carbon nanofibers in an epoxy resin, wherein the resulting "matrix" is then used in filament winding. Applicant has attempted to differentiate over this reference at page 3 of his specification by stating that, "this attempt was concluded that the carbon nanotubes dispersed resin did not affect the mechanical properties of the filament winding composites". This statement does not differentiate from the presently claimed invention since there is no claimed indication that the carbon nanotubes dispersed resin of the present claims must effect the mechanical properties of the fiber reinforcement. The filament winding of the reference correlates to applicant's fiber reinforcement. The resulting filaments of the invention include 11 layers of carbon nanofiber impregnated epoxy that has been dispersed into the filament winding. See page 1779, 2.3.

Yanagisawa et al documents that layers of cup shaped carbon fibers are commonly used in the art. Yanagisawa et al discloses that in an ordinary carbon fiber with a herring-bone structure, a number of hexagonal carbon layers in the shape of a cup having a bottom are stacked. Furthermore, the vapor-grown carbon fiber according to the first embodiment of the

Art Unit: 1714

patented invention has a structure in which a number of hexagonal carbon layers in the shape of a bottomless cup are stacked (this bottomless type carbon fiber is hereinafter called "a carbon fiber having a herring-one structure"). FIG. 13 of the patent shows a copy of a transmission electron micrograph of a very interesting carbon fiber of which the length is adjusted in a state in which several tens of bottomless cup-shaped hexagonal carbon layers are stacked. The carbon fiber product has a hollow shape with no bridge. The edges of the hexagonal carbon layers are exposed on the outer surface side and the inner surface side of the hollow portion. This carbon fiber is in the shape of a tube with a length and a diameter of about 60 nm which has a thin wall and a large hollow portion. The length of the carbon fiber may be adjusted by changing the ball milling conditions. The bottomless cup-shaped hexagonal carbon layers are thus divided without crushing the shape of the hexagonal carbon layer.

The ordinary practitioner in this art would have found it obvious to formulate a filament winding having fewer than 11 layers or even a single layer of the Ranta et al composites depending upon the intended function of the final product. Likewise utilization of carbon nanofibers having a cup-shaped carbon layer that are sequentially stacked one on top of the other such as taught by Yanagisawa et al, as that carbon nanofiber used in Ranta et al would have been obvious to one of ordinary skill in the art as well, since Yanagisawa et al teaches that in an ordinary carbon fiber with a herring-bone structure, a number of hexagonal carbon layers in the shape of a cup having a bottom are stacked.

Applicant has not attributed unexpected results to the cup-shaped carbon layer that are sequentially stacked one on top of the other.

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 6:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1714

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kriellion A. Sanders
Primary Examiner
Art Unit 1714

ks